

Application No.: 09/917,700

Docket No.: 21994-00026-US

AMENDMENTS TO THE CLAIMS

1. (Cancelled)
2. (Cancelled)
3. (Previously Presented) The recording and reproducing apparatus as claimed in claim 9, wherein the decoding means comprises a waveform equalizing circuit for obtaining a desirable partial response characteristic from the tangential push-pull reproduced signal.
4. (Previously Presented) The recording and reproducing apparatus as claimed in claim 9, wherein the decoding means is a viterbi decoder.
5. (Original) The recording and reproducing apparatus as claimed in claim 3, wherein a partial response polynomial equation for equalizing a reproduced signal in the partial response characteristic is $1+D-D^2-D^3$.
6. (Original) The recording and reproducing apparatus as claimed in claim 3, wherein the decoding means is a viterbi decoder.
7. (Original) The recording and reproducing apparatus as claimed in claim 4, wherein a partial response polynomial equation for equalizing a reproduced signal in the partial response characteristic is $1+D-D^2-D^3$.
8. (Cancelled)
9. (Currently Amended) A recording and reproducing apparatus for an optical information recording medium comprising a pit recording area recorded with various control information by a prepit, and a user recording area having a guide groove ~~forming a groove format~~, wherein a track, the is formed by a groove format and respective depth of ~~the a~~ prepit and ~~thea~~ groove ~~being~~ is approximately the same and approximately less than or equal to $\lambda/10$, where λ is the wavelength of a light source for reproducing information from the optical information medium;

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the recording and reproducing apparatus comprising:

~~detecting means including a light detector~~ having four areas defined as first area to fourth areas-area in a first direction of a tangential line of the track, and in a second direction orthogonal to the tangential line, wherein a first pair of a first area and a second area and a second pair of a third area and a fourth area are both aligned lined in the first direction;

wherein a third pair of the first area and the fourth area and a fourth pair of the second area and the third area are both aligned lined in the second direction, for detecting information from the pit recording area by detecting a signal in a form of a tangential push-pull reproduced signal;

further wherein the tangential push-pull reproduced signal is detected by a difference of a first signal adding the signal reproduced from the third pair of the first area and the fourth area, and a second signal adding the signal reproduced from the fourth pair of the second area and the third area, and for detecting a user information reproduced from the user recording area by detecting a signal as an aggregated signal;

wherein the aggregated signal is detected by adding the signal reproduced from ~~a the~~ first area to the fourth area; and

~~decoding means a decoder~~ for decoding information from the tangential push-pull reproduced signal and the aggregated signal.

10. (Previously Presented) A reproducing apparatus for an optical information recording medium comprising a pit recording area recorded with various control information by a prepit, and a user recording area having a guide groove ~~forming a groove format, wherein a track,~~ the is formed by a groove format and respective depth of ~~the a~~ prepit and ~~a the~~ groove is being approximately the same and approximately less than or equal to $\lambda/10$, where λ is the wavelength of a light source for reproducing information from the optical information medium;

the reproducing apparatus comprising:

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~~detecting means including~~ a light detector having four areas defined as first area to fourth area in a first direction of a tangential line of the track, and in a second direction orthogonal to the tangential line, wherein a first pair of a first area and a second area and a second pair of a third area and a fourth area are both lined-aligned in the first direction;

wherein a third pair of the first area and the fourth area and a fourth pair of the second area and the third area are both lined-aligned in the second direction, for detecting information from the pit recording area by detecting a signal in a form of a tangential push-pull reproduced signal;

further wherein the tangential push-pull reproduced signal is detected by a difference of a first signal adding the signal reproduced from the third pair of the first area and the fourth area and a second signal adding the signal reproduced from the fourth pair of the second area and the third area, and for detecting a user information reproduced from the user recording area by detecting a signal as an aggregated signal;

wherein the aggregated signal is detected by adding the signal reproduced from ~~the~~ a first area to the fourth area; and

~~decoding means a decoder~~ for decoding information from the tangential push-pull reproduced signal and the aggregated signal.

11. (New) The recording and reproducing apparatus as claimed in claim 10, wherein the decoding means comprises a waveform equalizing circuit for obtaining a desirable partial response characteristic from the tangential push-pull reproduced signal.

12. (New) The recording and reproducing apparatus as claimed in claim 10, wherein the decoding means is a viterbi decoder.

13. (New) The recording and reproducing apparatus as claimed in claim 10, wherein a partial response polynomial equation for equalizing a reproduced signal in the partial response characteristic is $1+D-D^2-D^3$.

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14. (New) The recording and reproducing apparatus as claimed in claim 10, wherein the decoding means is a viterbi decoder.

15. (New) The recording and reproducing apparatus as claimed in claim 10, wherein a partial response polynomial equation for equalizing a reproduced signal in the partial response characteristic is $1+D-D^2-D^3$.

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